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10/519,507	08/29/2005	Dominique Hertz	12928/10021	9276
26646	7590	12/07/2007	EXAMINER	
KENYON & KENYON LLP			PALABRICA, RICARDO J	
ONE BROADWAY			ART UNIT	
NEW YORK, NY 10004			PAPER NUMBER	
			3663	
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			12/07/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.



## Office Action Summary

Application No.

10/519,507

Applicant(s)

HERTZ ET AL.

Examiner

Rick Palabrica

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 05 November 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 13-22 and 25 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 13-22 and 25 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- ☐ Notice of Informal Patent Application
- ☐ Other: \_\_\_\_\_



### **DETAILED ACTION**

1. Applicant's 11/5/07 Amendment, which directly amended claims 13, 20 and 25, canceled claims 23 and 24, and traversed the rejection of claims in the 6/1/07 Office action, is acknowledged

Applicant's arguments have been fully considered but they are not persuasive.

### ***Response to Arguments***

2. Applicant argues that "none of the cited documents teach the cladding, plugs and spider as recited in the currently pending claims." See page 10, Remarks section, 11/5/07. The examiner disagrees.

The claims have been rejected based on a combination of references and NOT on individual references. For example, as stated in section 3 of the 6/1/07 Office action, either one of applied art Murakami et al. or Hertz et al. disclose the limitations of the claims EXCEPT for the materials of the cladding and the plugs. Murakami et al. or Hertz et al. disclose the claim limitations regarding the bundles of neutron-absorbing rods, metal cladding, spider support, and bottom end plugs. What these primary references lack in terms of cladding and plug materials are found in the teaching of secondary references. Either one of the cited primary references was COMBINED with secondary references to reject the claims.

It has been well settled that one cannot show nonobviousness by attacking references individually where the rejections are based on the combination of references.



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See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800F.2d 1091, 231 USPQ (Fed. Cir. 1986).

3. Applicant argues that applied secondary art, Ransohoff, which the examiner used to modify either one of art Murakami et al. or Hertz et al., does not teach the use of hafnium as cladding material. Applicant asserts:

*"However, as would be understood by one of ordinary skill in the art, such control rod poison would be placed inside the control rod element, rather than as cladding therefor." See page 8, Remarks section, 11/5/07 Amendment.*

The examiner disagrees. Note the following statement of Ransohoff:

*"It may be desirable under suitable, circumstances to incorporate the shielding poison into the structural or cladding material, particularly if the poison being shielded has little structure value. FIG. 5 depicts such a modification wherein the rod 31 contains a poison, such as B<sub>4</sub>C, identified by the numeral 32, shielded by a structural material 33, such as Hf or a Gd-steel alloy." See col. 6, lines 16+.*

Structural material 33 in Fig. 5 represents the cladding of the control element.

Thus, applicant's argument against Ransohoff is unpersuasive because the applicant has not shown that the reference does not teach what the examiner has stated it teaches, nor, has the applicant shown that the examiner's reasoning for and manner of combining the teachings of references is improper or invalid.

4. Applicant traversed applied secondary art, Klepfer et al. which the examiner used to modify either one of art Murakami et al. or Hertz et al., on the grounds that: a) the plugs in Klepfer et al. are 'zirconium base', and are not made of titanium or hafnium"; b) Klepfer et al. is directed to a nuclear fuel element and manufacturing method and the inclusion of a compact material of hafnium "to facilitate the fuel element manufacturing operation disclosed in Klepfer et al. would not be relevant to one of ordinary skill in the



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art in regard to absorber rod manufacturing”; c) “Klepfer et al. clearly limits (*sic*) the scope of applicable clads for use with the disclosed compact material in stating that “[t]hese resilient and fluid permeable compacts have been found to produce unexpected and surprising advantageous results both in the manufacture and the operation of nuclear fuel elements having zirconium, niobium, or yttrium base clads.” See page 9, Remarks section, 11/5/07 Amendment. The examiner disagrees.

As to argument a), the top and bottom plugs in Klepfer et al. contain cavities 18 and 20 wherein compacts 26 and 28 of titanium, hafnium or mixtures thereof are inserted (see col. 4, lines 34+). The use of these hafnium compacts, which are fluid permeable, reduces the embrittlement of the fuel element cladding tube during irradiation (see col. 5, lines 13+).

As presently set forth, the claims (e.g., claim 13) recite:

*“the top end plugs ... are of a titanium-based alloy ... and the bottom end plugs being of hafnium.”*

The claims recite the inclusive, open-ended transitional term, “are of” and “being of”, which are synonymous with “comprising”, “including”, “containing”, or “characterized by”, and does not exclude additional, unrecited elements. See, e.g., MPEP 2111.03 and *Genentech, Inc. v. Chiron Corp.*, 112 F.3d 495, 501, 42 USPQ2d 1608, 1613 (Fed. Cir. 1997) (“Comprising” is a term of art used in claim language which means that the named elements are essential, but other elements may be added and still form a construct within the scope of the claim).

Thus, the configuration of the plugs in Klepfer et al. having a metal base with cavity filled with either hafnium or titanium is not precluded by the claims. Additionally,



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the claims do not specify any particular structural configuration of the plugs and Klepfer et al.'s configuration is not precluded.

As to argument b), applicant appears to argue that Klepfer et al. is non-analogous art. The examiner disagrees.

As stated in section 3 of the 11/5/07 Office action, the primary references (i.e., Murakami et al. and Hertz et al.) and the secondary references (Ransohoff and Klepfer et al.) are in the same field of endeavor, i.e., components in a nuclear reactor subjected to irradiation therein. Note that both the control rods in any one of Murakami et al., Hertz et al., or Ransohoff include a cladding and end plugs, similar to the cladding and end plugs of the fuel rods in Klepfer et al. Both said control rods and fuel rods are inserted into the reactor core and subjected to the same neutron fluxes, temperature and pressure conditions in the core. Both said control rods and fuel rods generate gases inside the cladding structure as a result of neutron irradiation. Thus, any teachings regarding the cladding and end plugs in a fuel rod are of interest and of potential benefit to control rod technology.

Clearly, an artisan in the art of manufacturing of control rods would be interested in the art of manufacturing fuel rods, especially in relation to matters concerning the cladding and end plugs.

If applicant still has the opinion that the primary and secondary references applied by the examiner are NOT in the same field of endeavor, his argument would still have no basis. It has been held that a prior art reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem



with which the applicant was concerned, in order to be relied upon as a basis for rejection of the claimed invention. See *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992). In this case, the references are concerned with the problem of ensuring that the elements (i.e., control rods and fuel rods) maintain their integrity during their deployment in the reactor core of a nuclear power plant.

As to argument c), applicant's argument actually supports the validity of the examiner's rejection. If Klepfer et al. state, and applicant himself agrees, that a hafnium compact produces advantageous results with zirconium, niobium, or yttrium base cladding, then the same compact should also produce the same advantageous result with a hafnium compact. If a hafnium compact works well with a different material, e.g., zirconium, it should at least work as well with the same material, i.e., hafnium, as in the case of the Ransohoff- Klepfer et al. combination in the 6/1/07 Office action.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 13, 18-22, and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over either one of Murakami et al. (U.S. 6,636,580) or Hertz et al. (U.S. 5,742,655) in view of Ransohoff (U.S. 3,103,479) in combination with Klepfer et al. (U.S.



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3,141,830). Either one of Murakami et al. or Hertz et al. disclose the applicant's claim limitations except for the materials for the cladding and the plugs.

The reasons are the same as those stated in section 3 of the 6/1/07 Office action, as further clarified in sections 2-4 above, which reasons are herein incorporated.

6. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over either one of Murakami et al. or Hertz et al. in view of Ransohoff in combination with Klepfer et al., as applied to claims 13, 18-22, and 25 above, and further in view of Bernard (U.S. 3,467,398).

The reasons are the same as those stated in section 4 of the 6/1/07 Office action, as further clarified in sections 2-4 above, which reasons are herein incorporated.

### ***Conclusion***

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of



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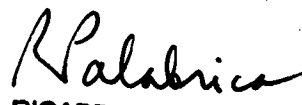
the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rick Palabrica whose telephone number is 571-272-6880. The examiner can normally be reached on 6:00-4:30, Mon-Thurs.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jack Keith can be reached on 571-272-6878. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

RJP  
December 4, 2007

  
RICARDO J. PALABRICA  
PRIMARY EXAMINER